U.S. PIRG

Submission to U.S. House of Representatives, Committee on Energy and Commerce
Regarding Federal Portfolio Standards for Electricity

Submitted: June 15, 2007

Dear Honorable Chairman Dingell and Chairman Boucher:

On behalf of U.S. PIRG's hundreds of thousands of citizen members across the country, we are grateful for the opportunity to share with you our thoughts on the appropriate structure and role of portfolio standard policies for sources of retail electricity.

U.S. PIRG is the federation of state Public Interest Research Groups. We are a non-profit, non-partisan advocacy organization that works on behalf of the American public to win concrete results for our health and well-being. Our network of researchers, advocates, organizers, and students across the country (including Environment Michigan and PIRGIM in Michigan and thousands of citizen members in Virginia) work to promote clean air and water, protect open space, safeguard consumers and promote good government.

Renewable energy and energy efficiency hold a great deal of promise for solving the problems facing America's electricity system. Rising and volatile prices for key fossil fuels such as natural gas, increasing strain on electricity infrastructure caused by rising demand, and the large and growing contribution of electric power plants to global warming are all issues worthy of federal action. Improving the efficiency with which America uses electricity and generating more of our power from home-grown, renewable resources can address many of these challenges, while leading to a cleaner environment and creating new economic opportunities.

Portfolio standards are one of the most important policy tools that can be used to reduce America's dependence on fossil fuels, eliminate the need for an expansion of expensive and dangerous nuclear power, and reduce America's emissions of global warming pollutants. U.S. PIRG and our state affiliates have worked with state officials across the country to promote renewable electricity standards (RES) designed to expand our production of clean renewable energy. The 23 states that have adopted RES policies will, according to the Union of Concerned Scientists, spark the development of enough renewable electricity to supply more than 28 million homes by 2020 and achieve carbon dioxide emission reductions equivalent to taking 17.7 million cars off the road.

But while these state efforts are a good start, a similar federal commitment to renewable energy and energy efficiency is critical. This submission details our views on the goals of portfolio standards, their benefits, and the appropriate structure of the programs.

The key points of our submission are as follows:

- The United States should adopt a federal renewable electricity standard that would require 20 percent of the electricity sold in the country to come from new renewable sources by 2020, and 25 percent by 2025. In addition, the United States should adopt an energy efficiency resource standard designed to ensure that energy efficiency provides for all new electricity needs, with a minimum target of 1 percent savings annually.

- Portfolio standards should not be used to support fossil fuel or nuclear technologies, nor should they be used to support other technologies with significant negative public health or environmental consequences. Renewable electricity standards should focus on promoting renewable resources, which provide a wide variety of benefits, including insulation from volatile

fossil fuel prices and reduced emissions of pollutants that cause global warming and harm Americans' health. In addition, renewable energy and energy efficiency should not be forced to compete with one another in a combined "alternative" or "advanced" energy standard, but rather should be the focus of separate standards.

- The United States can benefit from taking advantage of its ample renewable energy and energy efficiency potential. Studies of renewable electricity standards suggest that a national standard would likely have a minimal impact on electricity rates and may save money in the aggregate when reductions in natural gas consumption (and prices) are accounted for. In addition, renewable electricity standards can deliver substantial reductions in carbon dioxide emissions and create domestic jobs. An energy efficiency resource standard is likely to provide dramatic energy bill savings for American consumers while also reducing carbon dioxide emissions from power plants.

- Focusing specifically on a renewable electricity standard, any federal standard should:

    - Include only clean, renewable resources.
    - Focus on the development of *new* renewable resources.
    - Provide flexibility while not undermining the goals of the program. Flexibility can be gained by using tradable renewable energy certificates, which can be created and used anywhere in the nation, as the compliance mechanism.
    - Cover as broad a range of power retailers as possible.
    - Include significant penalties for non-compliance.

In addition, Congress must recognize that portfolio standards for renewable energy and energy efficiency, while beneficial, are not a panacea. Policy action on a variety of fronts will be necessary to fully address America's energy and global warming challenges. Other priorities include establishing a mandatory, science-based cap on global warming pollution of the scale necessary to prevent dangerous interference with the global climate, along with improved energy efficiency standards for vehicles, buildings, and appliances.

We hope the information and perspectives presented in this response are useful to you in your evaluation of portfolio standards. And we hope this submission contributes to a broader dialogue that results in a new direction for America's electricity industry that combines environmental benefits with new opportunities for the American economy.

Sincerely,

Anna Aurilio
Director, Washington Office

Rob Sargent
Energy Program Director

U.S. PIRG response to U.S. House of Representatives, Committee on Energy and Commerce request for input on portfolio standards for retail electricity suppliers.

1. Purpose of Portfolio Standards Proposals

(1a.) Do you believe that adopting one or more Federal "portfolio-standard" requirements applied to sources of retail electricity, mandating that a given percentage of the power sold at retail come from particular sources, is an advisable federal policy? Why or why not?

Federal portfolio standards for sources of retail electricity can play an important role in moving America toward a new energy future of reduced dependence on fossil fuels, lower emissions of global warming pollutants, and a healthy, prosperous economy. Specifically, the federal government should consider two types of portfolio standards: a renewable electricity standard (RES, also called a renewable portfolio standard) and an energy-efficiency resource standard (EERS).

U.S. PIRG supports a steady ramp up of renewable electricity sources through the adoption of a renewable electricity standard that would require 20 percent of America's electricity to come from new renewable sources of energy by 2020 and 25 percent by 2025. We also support an Energy Efficiency Resource Standard that requires energy savings designed to meet all new electricity needs, with a target of at least 1 percent of prior-year energy sales annually in the United States.

Portfolio standards can deliver important benefits for the United States.

First, portfolio standards can encourage the development of clean energy technologies that benefit America's economy. Renewable energy and energy efficiency are the most effective answers to many of America's most pressing energy challenges. Renewable energy technologies can diversify America's sources of energy, insulating consumers from volatile fossil fuel prices. According to some analyses, a renewable electricity standard can also produce a net reduction in energy costs. Energy efficiency is generally less expensive than new sources of power generation. Indeed, studies suggest that the United States could reduce its electricity consumption by 20 percent or more through energy efficiency at net economic savings, suggesting that adoption of an energy efficiency resource standard could deliver major cost savings for American consumers and businesses.[1] Both energy efficiency and renewable energy technologies have been shown to provide a significant economic stimulus in the form of revenue for local government, income for farmers and landowners, and domestic job creation. [2]

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[1] Steven Nadel, Anna Shipley and R. Neal Elliott, American Council for an Energy-Efficient Economy, *The Technical, Economic and Achievable Potential for Energy-Efficiency in the U.S. – A Meta-Analysis of Recent Studies*, 2004.

[2] Job creation, see e.g., Argonne National Lab and Environmental Protection Agency, Engines of *Growth: Energy Challenges, Opportunities, and Uncertainties In the 21st Century*, January 2004, available at www.4cleanair.org/members/committee/ozone/EnginesofGrowth.pdf; Environment California, *Renewable Energy and Jobs: Employment Impacts of Developing Markets for Renewables in California*, July 2003; Kammen, D., and Kapadia, K., University of California, Berkeley, *Employment Generation Potential of Renewables to 2010*, 2002; Hewings, G., Yanai, M., Learner, H., et al., Environmental Law and Policy Center, *Job Jolt: The Economic Impacts of Repowering the Midwest*, 2002; Tellus Institute, *Clean Energy: Jobs for America's Future*, October 2001; Union of Concerned Scientists, *Renewing Where We Live: A National Renewable Energy Standard Will Benefit America's Economy*, 2002 and 2003; Skip Laitner and Marshall Goldberg, for Land and Water Fund of the Rockies, National Renewable Energy Laboratory and Arizona State Energy Office, *Arizona Energy Outlook 2010, Energy Efficiency and Renewable Energy Technologies as an Economic Development Strategy*, July 1997.

At the same time, portfolio standards can achieve another important purpose – helping to reduce America's emissions of pollutants that cause global warming and more immediate threats to human health. Continued growth in electricity demand in the United States has recently sparked calls for a new generation of coal-fired power plants which, if built, could cause America's emissions of global warming pollution to increase by as much as 10 percent.[3] By contrast, current science tells us that, to prevent catastrophic impacts from global warming, the United States must halt growth in global warming emissions immediately, achieve emission reductions of 15 to 20 percent by 2020, and cut emissions by at least 80 percent by 2050. Aggressive renewable energy and energy efficiency portfolio standards could reduce or eliminate the need for new fossil fuel-fired generation and put America on a path toward achieving emission reductions of the scale required to prevent dangerous global warming.

However, a variety of bureaucratic and market barriers have thus far hindered renewable energy and energy efficiency from making a larger contribution to America's energy needs. Current energy market structures fail to ensure that those who invest in energy efficiency and renewable energy technologies reap the benefits of their decisions – including the benefits resulting from avoided infrastructure expenses and avoided global warming pollution. In addition, there are promising clean energy technologies – such as solar photovoltaic power – that lack the early market support that would enable them to achieve cost-competitiveness more quickly and make a material contribution toward the nation's energy goals and future global warming emission reduction targets. Portfolio standards can provide market certainty to help renewable energy and energy efficiency to surmount these barriers and deliver their many benefits to the environment and to the American economy.

(1b.) Is it appropriate for Government to impose generation-source conditions or energy saving requirements on load-serving utilities in order to serve public-policy purposes such as promotion of renewable energy production, energy efficiency, and reduction of carbon emissions? Why or why not?

As described above, renewable energy and energy efficiency portfolio standards can deliver significant environmental and economic benefits to the United States. State governments have already seen the wisdom of portfolio standards and have led the way in developing and implementing both renewable electricity standards and energy efficiency resource standards. As of this writing, 23 states have adopted RES policies, while at least 12 have adopted some form of an EERS.[4]

Despite these admirable state efforts, the federal government has an important role to play in ensuring that the benefits of these policies are experienced nationwide. The electric industry in America today is a creature of decades of federal policy intervention – including liability protection for the nuclear power industry, lax clean air standards for older coal-fired power plants, imposition and subsequent lifting of limits on construction of natural gas-fired power plants, and support for qualified facilities through the Public Utilities Regulatory Policies Act. Congress and successive administrations have decided that it is in the national interest to shape the electric industry in various ways, and the adoption of renewable and energy efficiency portfolio standards are the next logical steps in that direction.

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[3] U.S. PIRG Education Fund, *Making Sense of the "Coal Rush": The Consequences of Expanding America's Dependence on Coal*, July 2006.

[4] RES: 23 states based on Union of Concerned Scientists, *Renewable Electricity Standards at Work in the States*, downloaded from www.ucsusa.org/clean_energy/clean_energy_policies/res-at-work-in-the-states.html , 14 June 2007, with addition of New Hampshire and Oregon, which recently adopted RES policies; EERS: 12 states based on Maggie Eldridge, et al., American Council for an Energy-Efficient Economy, *The State Energy Efficiency Scorecard for 2006*, June 2007.

(1c.) If you favor such a policy, how would you define its specific purpose?
The specific purpose of an RES is to spur the development of America's home-grown renewable energy resources, which reduce pollution and deliver a variety of economic benefits. The purpose of an EERS is to reduce or eliminate growth in electricity consumption by taking advantage of America's vast "strategic reserve" of cost-effective energy efficiency potential in our homes, businesses and factories.

There are three important principles that policy-makers should keep in mind in the design of portfolio standards:

- Renewable energy and energy efficiency are complements, not competitors. That is, America needs to reduce its consumption of electricity through efficiency *and* to increase the share of our power that comes from renewable energy if we hope to address the challenges posed by global warming, over-reliance on fossil fuels, and our increasingly strained energy infrastructure. An RES and EERS should not set up renewable energy and energy efficiency as competitors (as would occur if renewable energy and energy efficiency were both counted toward compliance with a combined "alternative" or "advanced" energy portfolio standard). Instead, separate targets should be set for renewable energy and energy efficiency resources, either through separate portfolio standard programs or through separate tiers within a single program.

- Portfolio standards should not be used to support fossil fuel or nuclear technologies, nor should they be used to support other technologies with significant negative public health or environmental consequences. One of the most important benefits of a renewable electricity standard is to diversify our energy mix to be less reliant on fossil fuels. Including fossil fuels within a portfolio standard would defeat this important purpose. Nuclear power plants, on the other hand, are a mature technology that already receives ample federal subsidies. (Through 1999, nuclear power had received more than $145 billion (1999 dollars) in federal subsidies. This estimate does not include the ample subsidies for nuclear power in the Energy Policy Act of 2005.)[5] Additional federal support for nuclear power is simply unnecessary.

- Portfolio standards can be an important step toward solving America's energy problems, but they are not a panacea. Other public policies – including policies designed to cap global warming pollution, strengthen energy efficiency standards for buildings, vehicles and appliances, and expand research and development into clean energy technologies – will be needed to meet America's growing energy challenges.

(1d.) If Congress were to adopt an economy-wide policy mandating reductions in emissions of greenhouse gases, including the electricity industry, would such a portfolio standard policy remain necessary or advisable?
Portfolio standards will remain an important part of federal policy even if Congress were to adopt an economy-wide policy that mandates reductions in global warming pollution. Indeed, portfolio standards could become even *more important* under such a scenario. The most cost-effective reductions in global warming pollution in the early years of a carbon cap would likely come from energy efficiency improvements. However, to achieve the dramatic reductions in global warming pollution that will be needed if the United States is to play its part in avoiding the most catastrophic

[5] $145 billion based on Marshall Goldberg, Renewable Energy Policy Project, *Federal Energy Subsidies: Not All Technologies Are Created Equal*, July 2000.

impacts of global warming[6], we will need to develop and implement new, clean, renewable, zero-carbon technologies. An ambitious renewable electricity standard can help propel these technologies into the marketplace so that they will be available to help the electric sector achieve larger reductions in global warming emissions in the years to come.

(1e.) What analysis has been done of any portfolio standards requirement you endorse to demonstrate: its economic costs to consumers, nationally, and in various regions, in electricity rates; its benefits in greenhouse gas emission reductions; its implications for electricity reliability, security, and grid management; its implications for jobs and economic development; its implications for utility capital investment; other relevant factors?

A large body of research, along with a growing base of practical experience, shows that an ambitious renewable electricity standard would have a minimal impact on electricity rates while delivering significant reductions in carbon dioxide emissions from power plants and creating new jobs and new economic opportunities for the nation. These studies vary in their assumptions about future energy prices and the future shape of the electric industry, as well as the targeted level of renewable energy to be achieved through the RES, the breadth of the policy, the types of resources permitted, and other details of implementation. However, the general picture is clear: a properly designed RES can deliver large environmental and economic benefits at minimal cost to ratepayers.

There has been less detailed study of the impacts of EERS policies, but it is likely that an EERS would also deliver economic and environmental benefits to the United States.

Economic costs

A variety of economic analyses have shown that an aggressive RES will lead to modest impacts – ranging from a slight reduction in electricity rates to a slight increase – to electricity ratepayers.

- A 2007 analysis by the Energy Information Administration (EIA) found that a 15 percent RES would increase electricity prices by less than 1 percent by 2030 versus reference case forecasts. Because the RES would result in a reduction in natural gas-fired generation, it would also reduce demand for natural gas, causing gas prices to fall. As a result, cumulative expenditures for electricity and natural gas were projected to increase by a scant 0.3 percent.[7]

- A 2005 analysis by Resources for the Future (RFF) evaluated a 15 percent RES under a "high gas price" scenario (which more accurately represents current and projected future natural gas prices than the 2003 EIA data that provided the reference case of the study). The study found that average electricity prices would decline by 0.2 percent. (The RFF study did project

[6] The Intergovernmental Panel on Climate Change estimates that global warming pollutant emissions worldwide must be reduced by 50 to 85 percent below 2000 levels in order to keep concentrations of global warming pollutants in the atmosphere below 445 to 490 parts per million. Exceeding these concentrations would make it very likely that global average temperatures will increase by more than 2 degrees Celsius above pre-industrial levels, the threshold that the European Union and others recognize as the point beyond which "dangerous" impacts from global warming will become inevitable. As the world's largest emitter of global warming pollution, the United States will have to make greater proportional reductions than other nations – stopping growth in emissions immediately, reducing emissions by 15 to 20 percent by 2020, and cutting emissions by at least 80 percent by 2050.

[7] U.S. Department of Energy, Energy Information Administration, *Impacts of a 15-Percent Renewable Portfolio Standard*, June 2007.

significantly higher costs for electricity under a 20 percent RES, but the study did not evaluate the 20 percent RES under the high gas price scenario.)[8]

- A 2004 study by the Union of Concerned Scientists (UCS) estimated that a 20 percent RES would reduce electricity and natural gas bills by $49 billion. Electricity prices would decline by an average of 1.8 percent and natural gas prices by an average of 1.5 percent.[9]

- Analysts at the Lawrence Berkeley National Laboratory (LBNL) produced a 2007 meta-analysis of projections of the future price impact of state RES policies. The analysis reviewed 28 separate studies of RES proposals in 18 states, estimating the median electricity price impact of RES proposals at 0.7 percent.

While these analyses differ in the specifics, the general message is that an RES is likely to have limited impact on electricity rates, with some analyses projecting an aggregate *reduction* in electricity costs. Moreover, adoption of an RES is likely to reduce natural gas prices, bringing further benefits to homeowners, businesses and industry. According to studies included in a 2005 Lawrence Berkeley National Laboratory review, cumulative natural gas savings through price reductions triggered by a 10 to 20 percent federal RES were estimated to be as high as $74 billion, with most studies reporting benefits ranging from $10 billion to $40 billion.[10]

Finally, none of the studies evaluated the substantial economic benefits that would be delivered by an RES in terms of reduced emissions of global warming pollution and reductions in emissions of smog-forming pollutants, soot, and mercury from power plants.

The conclusion that an RES is likely to have only minimal impacts on electricity costs is being borne out by early experiences in the states. A 2007 review of state RESs by analysts at the Lawrence Berkeley National Laboratory and the EIA estimated that the rate impact of RES policies in six of seven states studied was likely less than 0.5 percent. (The seventh state, Massachusetts, has experienced higher costs due to poor program design, but the program still has an estimated rate impact of only 1 percent.)[11] The analysis held out the possibility that RES policies in other states could result in lower electricity costs and concluded that, to date, "there is little evidence of a sizable impact on average retail electricity rate in most instances" from RES policies.[12]

With regard to an energy efficiency resource standard, the American Council for an Energy-Efficient Economy (ACEEE), in a 2006 study, estimated the cost savings that would result from a national EERS that requires electricity and natural gas savings through energy efficiency of 0.75 percent of prior year

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[8] Karen Palmer and Dallas Burtraw, Resources for the Future, *Cost-Effectiveness of Renewable Electricity Policies*, January 2005.

[9] Union of Concerned Scientists, *Renewing America's Economy: 2004 Analysis*, downloaded from www.ucsusa.org/clean_energy/renewable_energy_basics/renewing-americas-economy.html, 13 June 2007.

[10] Ryan Wiser, Mark Bolinger and Matt St. Clair, Lawrence Berkeley National Laboratory, *Easing the Natural Gas Crisis: Reducing Natural Gas Prices through Increased Deployment of Renewable Energy and Energy Efficiency*, January 2005.

[11] Massachusetts has a too-low price cap and also does not permit long-term contracts for renewable energy, which has stifled development of new renewable energy to satisfy the requirement.

[12] Ryan Wiser, Christopher Namovicz, et al., Lawrence Berkeley National Laboratory, *Renewables Portfolio Standards: A Factual Introduction to Experience from the United States*, April 2007.

sales. The ACEEE analysis estimated that the policy would provide net benefits by 2020 of $170 billion to consumers and businesses, with a benefit-to-cost ratio of 2.6-to-1.[13]

Greenhouse Gas Emission Reductions

Many of the studies cited above also estimated the carbon dioxide emission reductions that would result from an RES. Estimates of emission reductions depend critically on assumptions as to future generating capacity additions, which are themselves dependent on the broader policy context. Nonetheless, the studies agree that an RES can deliver significant reduction in greenhouse gas emissions from the electric power sector.

A 2006 U.S. PIRG Education Fund analysis estimated that an RES that required 20 percent of electricity to come from new renewable sources by 2020 (in combination with policies to reduce electricity consumption) would reduce U.S. carbon dioxide emissions by 511 million metric tons in 2020, reducing U.S. carbon dioxide emissions by approximately 8 percent compared to 2004 emission levels.[14]

EIA's 2007 analysis of a 15 percent RES projected that the policy would reduce carbon dioxide emissions by 6.7 percent versus business-as-usual in 2030. Cumulative emission reductions from the policy through 2030 were estimated at 2,925 million metric tons – greater than the annual carbon dioxide emissions of any nation in the world other than the United States and China.[15]

RFF's 2005 analysis estimated that a 15 percent RES would reduce power sector carbon dioxide emissions by 10 percent, and that a 20 percent standard would reduce emissions by 13 percent versus reference case assumptions.[16] The 2004 UCS study estimated that a 20 percent RES would reduce carbon dioxide emissions by 15 percent versus business as usual.[17]

ACEEE's 2006 study of a national EERS for electricity and natural gas estimated that the policy would reduce carbon dioxide emissions by approximately 320 million metric tons in 2020, for a reduction in total emissions from electricity and natural gas consumption of about 8 percent.[18]

Electric power plants are the largest source of global warming pollution in the United States. Adoption of portfolio standards for renewable energy and energy efficiency can play an important role in reducing the impact of electricity generation on the global climate.

Electricity Reliability, Security and Grid Management

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[13] Steven Nadel, American Council for an Energy-Efficient Economy, *Energy Efficiency Resource Standards: Experience and Recommendations*, March 2006.
[14] U.S. PIRG Education Fund, *Rising to the Challenge: Six Steps to Cut Global Warming Pollution in the United States*, Summer 2006.
[15] U.S. Department of Energy, Energy Information Administration, *Impacts of a 15-Percent Renewable Portfolio Standard*, June 2007.
[16] Karen Palmer and Dallas Burtraw, Resources for the Future, *Cost-Effectiveness of Renewable Electricity Policies*, January 2005.
[17] Union of Concerned Scientists, *Renewing America's Economy: 2004 Analysis*, downloaded from www.ucsusa.org/clean_energy/renewable_energy_basics/renewing-americas-economy.html, 13 June 2007.
[18] Steven Nadel, American Council for an Energy-Efficient Economy, *Energy Efficiency Resource Standards: Experience and Recommendations*, March 2006.

A variety of studies (as well as practical experience in Europe) suggest that renewable energy can be integrated into the electric grid at levels sufficient to meet an ambitious RES while sustaining system reliability. Denmark already obtains more than 20 percent of its power from wind energy, and a recent review of American grid studies concluded that wind power can be integrated into the grid in proportions of at least 15 percent (in terms of capacity) at relatively low cost.[19]

Other forms of renewable energy (such as distributed solar photovoltaic systems), as well as energy efficiency improvements, can have a beneficial impact on electric reliability and system costs by reducing strain on the grid at periods of peak demand. Solar photovoltaics are particularly valuable as they produce the most power at precisely the time when power is most needed: during hot, summer days when air conditioning use is at its highest. Studies suggest that solar photovoltaics deliver significant, tangible benefits to the grid, worth between $3,500 and $6,000 per kilowatt.[20] Similarly, energy efficiency improvements reduce strain on the grid, which is particularly valuable during peak demand periods. The 2006 ACEEE study of EERS policies suggests that a national EERS could reduce peak demand for electricity by 124 gigawatts by 2020 – the equivalent of 400 power plants of 300 megawatts each.[21]

Jobs and Economic Development

Renewable energy and energy efficiency are potent domestic job-creators. Moreover, renewable energy development has a special role to play in boosting rural economies.

The 2004 UCS study of a 20 percent RES estimated the job creation and economic development impacts of the policy. The study found that a 20 percent by 2020 RES would create approximately 355,000 new jobs – approximately twice as many as would be created by meeting electricity needs with fossil fuels. In addition, the analysis estimated that a 20 percent RES would provide $16.2 billion in additional income to farmers, ranchers and rural landowners, along with $5 billion in local tax revenues.[22]

Similarly, in 2005 the U.S. PIRG Education Fund estimated that a shift in federal policy that combined a 20 percent RES with a shift in federal energy subsidies away from fossil and nuclear energy and toward renewable energy and energy efficiency would create more than 200,000 new jobs by 2020 and increase wages by $6.8 billion.[23]

Renewable energy can deliver particular benefits for rural economic development. Royalty payments for wind turbines are typically around $2,000 for a medium-sized wind turbine, providing a boost to farmers and ranchers who lease their land for wind energy development. Wind energy also provides a

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[19] U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, *Annual Report on U.S. Wind Power Installation, Cost, and Performance Trends: 2006*, May 2007.
[20] Chris Robertson, Jill K. Cliburn, *Utility-Driven Solar Energy as a Least-Cost Strategy to Meet RPS Policy Goals and Open New Markets*, presented at ASES Solar 2006 Conference, 7-13 July 2006.
[21] Steven Nadel, American Council for an Energy-Efficient Economy, *Energy Efficiency Resource Standards: Experience and Recommendations*, March 2006.
[22] Union of Concerned Scientists, *Renewing America's Economy: 2004 Analysis*, downloaded from www.ucsusa.org/clean_energy/renewable_energy_basics/renewing-americas-economy.html, 13 June 2007.
[23] U.S. PIRG Education Fund, *Redirecting America's Energy*, 2005.

property tax boost to rural communities.[24] Biomass energy development creates similar economic opportunities for rural communities.

2. Portfolio Inclusions and Exclusions

(2a.) What is the principle that should determine inclusion or exclusion of any energy source from an adopted portfolio standard?

Resources that should be included within an RES are those that are *renewable*, and that do not pose significant environmental harm or danger to public health.

Resources that should be included within an EERS include technologies that reduce end-use energy consumption. Combined heat-and-power could be eligible for inclusion in an EERS, provided that it meets strict emission standards as well as minimum thresholds for energy efficiency.

We reiterate here that an RES and an EERS should be *separate* requirements – that is, that renewable energy and energy efficiency should not be forced to compete with one another within a single standard. America needs to develop both its renewable energy and energy efficiency resources to address its energy supply and global warming challenges.

(2b.) What generation sources for retail electricity supplies should be included and should be excluded from any mandatory portfolio requirement that is adopted?

Specific sources that should be included in a renewable electricity standard include the following:

- Wind power
- Solar power (both photovoltaic and concentrating solar thermal)
- Landfill gas
- Geothermal power
- "Clean," sustainable biomass (see footnote for definition)[25]
- Tidal, wave, ocean current and ocean thermal energy

Specific sources that should be excluded in a renewable electricity standard include (but are not limited to) the following:

- Sources of energy that create toxic emissions or pose environmental harm. Among these are non-sustainable forms of biomass (see above), municipal solid waste and tires.
- Municipal solid waste. In addition to producing toxic emissions, aggressive reduction and recycling of waste is a more appropriate energy-saving strategy than burning it in incinerators.
- Advanced technologies such as combined heat-and-power and fuel cells that use non-renewable resources (although some of these sources may be eligible for inclusion in an EERS).
- Energy efficiency (though efficiency should be promoted through an aggressive EERS)

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[24] U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, *Wind Energy for Rural Economic Development*, August 2004.

[25] Categories of biomass that should be eligible for inclusion in an RES include the following: 1) Any plant-derived organic matter available on a renewable basis; 2) non-hazardous plant matter waste material that is segregated from other waste materials and is derived from: a) an agricultural crop, crop by-product or residue resource, b) waste such as landscape or right-of-way tree trimmings or small diameter forest thinnings, but not including i) municipal solid waste, ii) recyclable post-consumer waste paper, iii) painted, treated or pressurized wood, iv) wood contaminated with plastic or metals, or v) tires; 3) gasified animal waste; 4) digester gas; 5) biogases and biofuels derived, converted or processed from plant or animal waste or other organic materials; 6) landfill methane. Any biomass combustion must meet the best available control technologies for emissions. Preference should be given for gasified biomass technologies.

- Any fossil fuel or nuclear technology. Low- or zero-carbon fossil and nuclear resources would inherently benefit under a cap on global warming emissions from the power sector. An RES, however, should be designed so as to promote technologies that are not only low in carbon dioxide emissions, but that also reduce dependence on fossil fuels, diversify America's energy supplies, and pose minimal threats to the environment or public health. Neither low-carbon fossil fuel resources nor nuclear power meet these standards.

An energy efficiency resource standard should include all measures to improve end-use energy efficiency. Combined heat-and-power (CHP) may be included, provided that installation of CHP delivers significant improvements in energy efficiency and meets stringent emission requirements. Should an EERS include savings requirements for natural gas, measures such as solar water heating and others that reduce natural gas consumption may also be considered.

(2c) To the extent that multiple renewable energy sources and efficiency or other sources are eligible for inclusion, should any tiers among them or separate sub-requirements be adopted?
Separate tiers or sub-requirements within an RES should be used to promote technologies that have achieved commercial status, deliver strong environmental benefits, and which require additional market support in order to achieve broad commercial applicability. Solar power technologies, in particular, have the potential to benefit from a "carve-out" within a renewable electricity standard. Several states – including Arizona, New Jersey and Nevada – have established minimum solar energy requirements within their RES policies. Solar power has tremendous potential to provide clean, renewable energy and to do it on a distributed basis, thus reducing the need for future investments in transmission capacity and new electricity generation. Consistent and strong policy support, such as would be achieved through a solar carve-out in an RES, can give manufacturers the confidence needed to invest in new production facilities and technological innovations, thus laying the groundwork for solar power to achieve cost-competitiveness in the years to come.

(2d) Should there be any distinction between existing and new sources of generation eligible for inclusion in the portfolio? If so, what would be the threshold date for eligibility?
Only "new" sources of renewable energy should be eligible for inclusion under an RES. The threshold date of eligibility should be the date of enactment of a federal RES. Renewable energy sources that meet the definition of the federal RES, and which are defined as "new" resources under the provisions of a pre-existing state RES, should also receive credit as "new" resources.

(2e) Would the electricity equivalent of useful thermal energy from eligible sources be credited against the requirement?
An RES should apply to electricity generation from renewable energy sources only. Technologies that produce useful heat from renewable sources (such as solar water heating) and those that capture waste heat from power generation (such as combined heat-and-power) are potentially important contributors to America's energy needs and should be promoted, but not within the context of the RES. Some of these measures may be included within an EERS, particularly one that covers both electricity and natural gas.

(2f) To the extent energy efficiency is included: how would the required savings be measured and verified; against what base consumption period?
As stated above, energy efficiency should be the target of an EERS with separate and distinct targets from an RES. Several states have developed protocols for monitoring and verification of energy savings under an EERS and Congress should look to their example. Targeted savings levels under an EERS should be tied to historic, not projected sales.

3. Percentage Requirement and Timing

(3a through 3c) What target percentage of total retail power deliveries should be achieved by the required portfolio? What is the target year for reaching the ultimate mandated portfolio percentage? Should there be a straight-line, accelerating, or other form of "ramp-up" to the ultimate target percentage?

For an RES, the policy should target the provision of 20 percent of electricity from new renewable resources by 2020 (and 25 percent by 2025). For an EERS, the target should be tied to an overall goal of meeting all new electricity needs through energy efficiency. At minimum, an EERS should target savings of at least 1 percent of prior year electricity sales on an annual basis.

For an RES, there should be a linear ramp-up (on the order of 2 percent per year) toward achievement of the 20 percent standard. Depending upon the timeline for adoption, lesser requirements, on the order of 1 percent per year, may be appropriate during the first year or two of the program.

(3d) Should there be any "off-ramps" or other built-in automatic changes in requirements as a function of contingencies?

There should be no "off-ramps" included within the RES. Practical experience and academic study suggest that America has ample renewable energy resources and that the cost of achieving the targets of even an ambitious RES are modest. Neither cost, nor climate variability, nor transmission availability are impenetrable roadblocks to achieving RES targets and should not be permitted to stand in the way of increasing production of renewable energy.

Should renewable energy certificates (RECs) be used as the means of demonstrating compliance with the program, and should a national market for RECs be created, there will be plenty of flexibility for utilities in all states to comply with the program. Additional flexibility could be provided through limited banking or borrowing of RECs (so long as borrowing of RECs is strictly limited – perhaps two to three years – and is accompanied by a plan to repay borrowed credits, with interest over a short period of time, and using resources secured under long-term contracts).

4. Relationship to State Portfolio Standards and Utility Regulation

(4a) Should an adopted Federal portfolio standard set: a minimum standard, allowing States to set or maintain higher targets; a preemptive standard, prohibiting States to set higher or different targets; merely a mandate for a standard, allowing States to set their own targets at any level; merely a given percentage target, allowing States to elect generation or efficiency sources eligible to meet it; a standard applying only to States without prior portfolio requirements, grandfathering all prior standard programs?

An adopted federal portfolio standard should set a minimum standard, not a ceiling, for action to expand renewable energy or energy efficiency. States should maintain the flexibility to impose stronger standards, preserving their role as "laboratories of democracy." Neither a mandate for state standards, nor an unenforceable "target" is sufficient to spur renewable energy production nationwide. Similarly, a standard that applies only to states without an RES would allow some states with existing, but weak RESs to retain standards that are weaker than the federal standard – a counter-productive result.

(4b) Can and should State regulatory agencies be required to pass through the costs of complying with Federal portfolio standards requirements in retail rates?

Federal policy should not require states to pass through the cost of compliance with a federal RES or EERS in retail rates. States retain primary authority for the setting of retail electricity rates and have already developed procedures for the recovery of costs incurred in compliance with federal

environmental regulations. States should retain the ability to determine whether and how such costs will be recovered in compliance with an RES or EERS.

5. Utility Coverage

(5a) Should any retail sellers of electricity be exempt from the portfolio requirement?
Ideally, all retail sellers of electricity should be covered by a federal RES or EERS. Renewable energy and energy efficiency have the potential to benefit consumers of all utilities, whether they are privately or publicly owned. It is essential that private power marketers be included within an RES, as they compete in many states that have undergone restructuring with regulated electricity suppliers who would be subject to the requirement. Federal policy should ensure that there is a level playing field between regulated utilities and unregulated private marketers.

(5b) Should any standard apply to wholesale power markets or sales?
Imposition of a properly designed retail RES or EERS would not require the imposition of similar requirements at the wholesale level.

(5c) Should there be any basis for discretionary exemptions of certain States or utilities?
There should be no basis for discretionary exemption of states or utilities. Should renewable energy certificates (RECs) be used as the means of compliance with the program, and should a standard, national RECs market be created, there will be plenty of flexibility for all states or utilities to comply with the program.

6. Administration and Enforcement

(6a) Should a federal government entity enforce the requirement and decide on any exemptions? If so, which one? If not, should enforcement be delegated to the States or to regional transmission or electric-system-operation entities?
The federal government should enforce the RES and EERS, with enforcement authority located in the Department of Energy.

(6b) How should Federal and State enforcement be coordinated in States with their own portfolio requirements?
Coordination of enforcement between federal and state authorities is advisable. Details of that coordination should be worked out between federal and state officials.

(*6c) What penalties should apply for failure of utilities to meet the percentage mandate?*
Penalties for non-compliance with the portfolio standard should be structured so as to encourage compliance through the actual procurement of renewable energy or energy efficiency. Penalties should not be designed to serve as an "alternative compliance" path and should be high enough to encourage compliance through the procurement of renewable energy or purchase of credits, depending upon the compliance mechanism chosen for the portfolio standard as a whole. Penalty payments should be used to forward the goals of the program by supporting renewable energy development or implementation of energy efficiency measures. In addition, a portfolio standard should not guarantee cost-recovery for penalty payments under the standard, particularly where renewable resources, energy efficiency resources or credits could be procured at lower cost to satisfy the standard.

7. Credits and Trading

(7a.) Should tradable credits for qualifying generation be utilized as the mechanism for establishing compliance?

With regard to an RES, use of renewable energy certificates (RECs) will add flexibility to the program and likely reduce compliance costs, while continuing to spur the development of new renewable resources in the United States. The use of tradable credits could also ease compliance with an EERS. However, in contrast to renewable energy resources, energy efficiency improvements are available on a broad basis in every utility service territory in America. Ratepayers who are subject to increased costs stemming from EERS compliance should ideally receive the lion's share of the benefits of the program through increased energy efficiency investments within their own service territory. As a result, utilities should be encouraged to comply with an EERS through investments made in their service territories, with the role of trading more limited than in an RES.

In addition, portfolio standard credits for voluntary renewable energy purchases through utility "green pricing programs" should not be eligible for compliance with an RES.

(7b.) Should credit trading be permitted or required on a national basis in order to achieve least-cost compliance with the portfolio standards?
Yes. The federal government should also establish uniform criteria for eligibility for RECs and any credits issued under an EERS. A national credit-trading system would tend to encourage least-cost compliance with the standards.

(7c.) Should there be a cap on credit values to limit costs?
There should not be a cap on credit values. Cost caps will tend to limit the market signals that are needed to spur renewable energy and energy efficiency development in the United States. The use of a broad-scale credit trading regime, with limited allowance for banking and borrowing of credits, should provide sufficient flexibility to avoid undue costs.

(7d.) As between a utility purchaser and a qualifying power generator, to whom should the portfolio standard credits be initially allocated?
Portfolio standard credits should be awarded to the entity that is responsible for delivering the verified renewable energy or energy efficiency resource – in the case of and RES, the generator, and in the case of an EERS, the administrator of the energy-efficiency program, whether it be a utility or an energy services company. The utility purchaser should then be required to purchase and surrender RECs to demonstrate compliance with the program.

(7e.) What relationship, if any, should portfolio standard credits have to other State and Federal credit trading programs for SO2, greenhouse gases, or biofuels?
The relationship between portfolio standard credits and other credit trading schemes is dependent upon the broader context of the emission reduction program.